

KANO AIR TERMINAL

Africa's Crossroads of the Air



KANO AIR TERMINAL



KANO AIR TERMINAL

An account of its development

BY E. H. COLEMAN, A.F.C., A.F.R.Ae.S.

Director of Civil Aviation, West Africa.

Passengers on their way to the Ghana Independence Celebrations boarding a B.O.A.C. Stratocruiser at Kano. These airliners are now in regular service on the West Africa – U.K. route.

*Published by the
Federal Information Service, Lagos, for the
Department of Civil Aviation, Federation of
Nigeria, and printed in England by Brown
Knight & Truscott Ltd. of Bury Street, London*

CONTENTS

	<i>Page</i>
Twenty-one Years' Service	5
The Original Aerodrome	6
The Runway	7
Taxiway	10
Parking Apron	12
The Weather	13
Runway and Taxiway Lighting	13
General Operations	19
The Air Terminal	24
The Flagstaff, Ensigns and Flags	30
Services and Supplies	32
Fire Patrol Service	32
Refuelling	34
Radio Navigational Aids	35
Airport Hotel	37
Residential Housing	37
The Cross Roads of Africa	37
Airlines	38

TWENTY-ONE YEARS' SERVICE

THE need for aerodromes in West Africa was first realised several years after the finish of the first world war in Europe and in the early 1930s a representative of the British Air Ministry paid a visit to Nigeria to inspect possible sites for a chain of landing grounds for use by Royal Air Force and civil aircraft. No actual constructional work was carried out for some years although plans were formulated which included an aerodrome at Kano.

In the 1920s several flights to Nigeria had been carried out by R.A.F. squadron aircraft based on Khartoum, firstly to Kano and later to Lagos, but the first civil aircraft on record as having flown in the vicinity of Kano is a light aeroplane, privately owned, believed to be of the early De Havilland "Moth" variety, which was flown from Lagos to Kano in 1930 where it continued to be flown for private

purposes for some time. No commercial flying took place until six years later when Imperial Airways inaugurated the first international air services to Nigeria in four-engined De Havilland DH86 biplanes, which connected at Khartoum with the larger type Hannibal aircraft of Imperial Airways flown on the Cairo-Kisumu route to South Africa.

In those days the airmail service as far as Khartoum came in a very different manner from to-day. After crossing from London to Paris in HP.42 "Hannibal" type aircraft passengers and mail travelled, at that period, to Brindisi in southern Italy by rail and thence by flying boat to Alexandria in Egypt. From Alexandria those destined for South and West Africa embarked again on a HP.42 land plane and it was following the nightstop at Khartoum that passengers and mail bound for Nigeria were transferred to

the smaller aircraft for the flight to Kano the next day. The Khartoum-Kano service carried up to 18 passengers and mail and the route flown was via El Fasher in the Sudan, Fort Lamy in French Equatorial Africa, and Maiduguri at the north eastern edge of Nigeria; the service was later extended to Lagos.

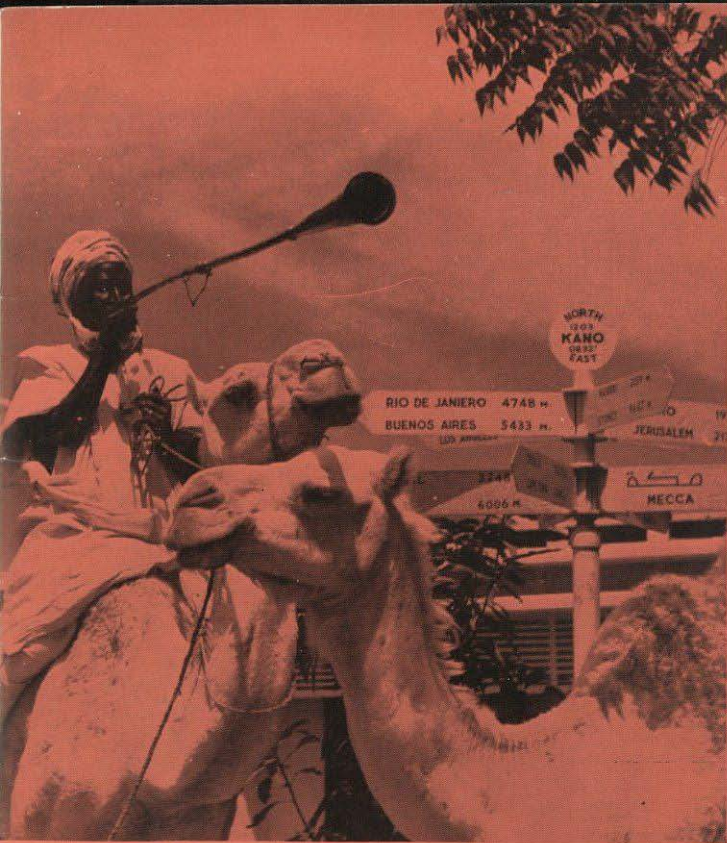
The original aerodrome

No aerodrome was available at Kano for the first air services of Imperial Airways to Nigeria. The aircraft landed to the north of the walled city on the polo ground which had a maximum length of only about 1,200 ft. across from corner to corner. Up to that period rectangular shaped landing grounds were in general use throughout the world but, with the introduction of wheel brakes on aircraft, runways as we know them to-day, as distinct from landing areas, were being introduced and, in keeping with the times, plans were drawn up for a runway aerodrome at Kano.

In the early days it was considered necessary to construct several runways orientated in varying directions to avoid cross wind landings and take offs as the older type of tail-wheel aircraft were more prone to swing than the modern nose wheel types. Two runways were designed for Kano with one main runway of 3,000 ft. which could be extended

later to 4,500 ft. in the direction of the prevailing wind, and a secondary runway of 2,400 ft. for use when strong cross winds were experienced on the main runway. In the early design for Kano thought was given to the need for a third runway, but this was never in fact constructed. The aerodrome with the two runways, as it was eventually constructed by the Public Works Department, was improved and surfaced during the war; taxiways were built to speed up the flow of military aircraft but it was not necessary to increase the bearing strength to provide for the sizes of aircraft operating up to the end of the war or for several years afterwards. During the war a terminal building was constructed also for passenger handling and at which Customs and Immigration facilities were made available; Kano was then declared a port of entry for Nigeria.

Although there was a world-wide expansion of international air services after the last war there was no marked development at Kano in long-range commercial air traffic until the 1950s. It was clear, however, that Kano Airport, situated as it is on the fringe of the Sahara desert, is a natural focal point for long-range services between South Africa and the continent of Europe, and the airport is fortunately situated so that aviation fuel can be transported there by rail from the bulk supplies discharged from the tankers in Lagos harbour. It was obvious, therefore, that in



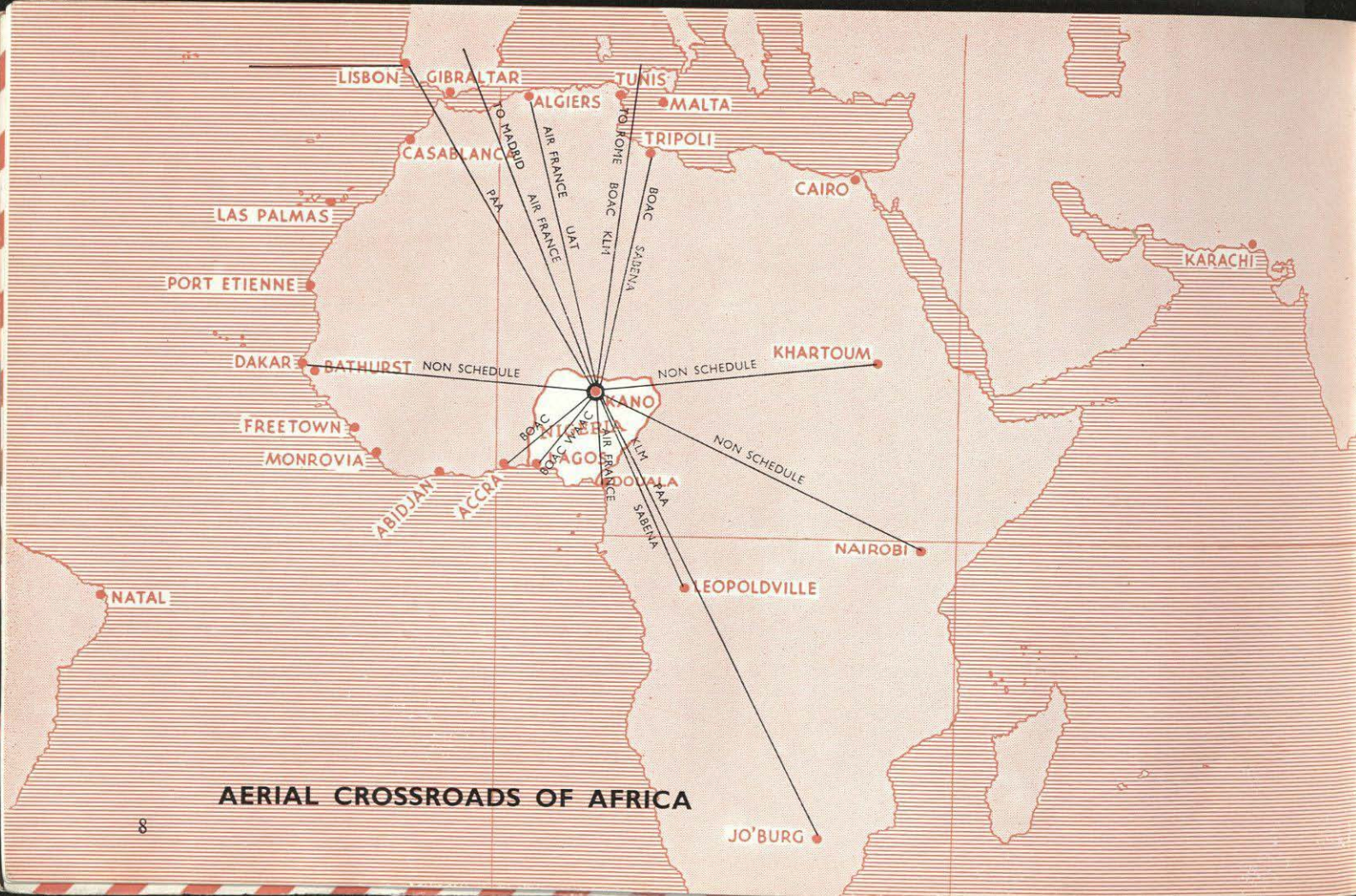
The Kano Trumpeter—Herald of the Aerial caravans

the course of time long-range aircraft would inevitably make use of Kano as a technical stop for refuelling purposes before undertaking the long desert crossing, the shortest stage of which for heavy aircraft is from Tripoli, approximately 1,200 miles away to the north of Kano. The slow development of Kano as an international airport was due almost certainly to the fact that aeronautical facilities, and particularly radio navigational aids, were adequately provided for over the eastern route down the Nile which had been well established since Imperial Airways pioneered the airmail services to South Africa, before the last war, between Cairo, Khartoum and Kisumu and from thence to Durban.

As the range and endurance of civil aircraft increased and the aeronautical facilities improved at Kano and at intermediate points on the desert route, so the introduction of services between South Africa and Europe gained impetus. This was certain to occur for economic reasons alone as the route via Kano between South Africa and Europe is approximately 800 miles shorter than by the eastern route following the Nile.

The Runway.

In 1948, when it appeared that long-range aircraft of greatly increased all-up weight were likely to operate in the



future through Kano, and particularly as it seemed that the Comets ordered by B.O.A.C., as the result of the decisions of the Brabazon Committee, would be flown via Nigeria, a party from the Ministry of Civil Aviation in the United Kingdom visited Kano with special equipment for testing the bearing strengths of runways, taxiways and aircraft parking areas then in use. It was found that the runways then existing were neither sufficiently strong to bear the greatly increased weights of modern aircraft nor was the length of the main runway sufficient, particularly in regard to the density altitude factor, for the operation of pure jet aircraft such as the Comet. A survey by the Nigerian Department of Public Works, made shortly after the report had been submitted by the Ministry of Civil Aviation party, revealed that it was possible to construct a runway of nearly 9,000 ft. in length which would provide unobstructed approaches and which would lie partly within the old aerodrome boundary. The site proposed was to the north of the old main runway, on a bearing of 070/250 degrees (magnetic), at a slight angle to the old main runway which was orientated 050/230 degrees (magnetic). A decision was made in 1950 to proceed with this work and when funds had been approved more detailed plans were drawn up which were amended when the need arose as work progressed. After a careful study of meteorological

conditions in the area it was decided that, to cater for mainly modern tricycle undercarriage aircraft of greatly increased weights, one main runway would be constructed, compacted to withstand heavy loads.

The work was undertaken by the Public Works Department of Nigeria by direct labour and heavy constructional plant was transported to Kano towards the end of 1950; the actual work on the new runway was started in March, 1951. Kano Airport is 1,553 ft. above sea level and, using a basic length of 7,000 ft. at sea level as a standard, calculations employing a recognised formula for density altitudes were made, as a greater length of runway is needed at higher levels, and it was decided that the new runway should be 8,610 ft. in length and 200 ft. wide. As the name implies the formula allows, amongst other things, for air density and temperature, the latter being an important factor at Kano where the tarmac temperature during the hot season may rise as high as 152 degrees Fahrenheit.

By international standards the design of the runway fell into the category of a Class B runway constructed to withstand an aircraft weight of 60,000 lbs. isolated wheel load with stop-ways of 200 ft. at each end and consolidated stripping of 400 ft. each side of the paved runway. After careful lining up of the runway site and after spot levels had been checked to ensure that the gradient limitations would

conform with those recommended by the International Civil Aviation Organisation, the subsoil was removed by bulldozers to a depth of 28 ins. After levelling, selected fill was dumped to a depth of 6 ins. The first layer of fill was then watered and rolled with 6-ton rollers to a density of 110 lbs. per cubic foot ; the process was repeated and a second layer of fill was laid, watered and compacted to a depth of 6 ins. with a minimum dry density of 115 lbs. per cubic foot and a third layer of fill was then laid and compacted to a density of 120 lbs. per cubic foot. These three layers together formed the basis for the runway over this vast area, which has a foundation of 27 ins. deep.

The scene at the time of the constructional work was one of great activity; the tremendous amount of fill needed was largely carried in panniers on the backs of the small donkeys indigenous to the area, hundreds of which were used. These hard working animals, with their attendants, formed an extraordinary sight as they scurried backwards and forwards with their loads and, intermingled in this scene, were bulldozers, trucks, rollers and other vehicles employed on the engineering constructional work.

After the work had been in progress for about a year information was received to the effect that De Havilland Comets of the French airline, Union Aeromaritime des Transport, were to be flown through Kano and a great

effort was made to complete the runway so that it would be available in time for use during daylight hours. The compaction of the fill was carried out at first by 6-ton rollers but some mechanical difficulties were experienced, largely due to the dust, and it was considered advisable to supplement the work of the rollers by manual labour. The final compaction work was undertaken in an unusual manner by employing large numbers of local workmen, each of whom was armed with a heavy tamp. After being formed into squads of approximately 100 strong they were lined up and each squad was provided with a small orchestra consisting of a conductor, a drummer and a cymbal player; at a given signal from the conductor the workers poised their tamps and after a roll of the drums and a clash of the cymbals the tamps were lowered with great force and in unison. The system proved highly efficient and it was clear that all the workers enjoyed greatly this unique form of labour. After final compaction of the runway two coats of bitumen were applied, the first of M.C.2 bitumen blinded with gravel and the second of Shellmex 200/300 blinded with sand.

Taxiway.

After the main work on the runway had been completed the construction of a taxiway was started, 100 ft. in width



Manual labour to music found to be the best method of levelling

and paralleling the runway on the southerly side. The taxiway connects to the runway by four links, one at each end of the runway and at two intermediate points, all of which were built to the same specifications and in the same manner as the main runway. At each of the end connecting links large semi-circular passing bays, 150 ft. in radius, were constructed to allow combustion engined aircraft to run up their engines prior to flight whilst jet aircraft, which do not need running up, could by-pass them on the taxiway.

Parking Apron.

As part of the project a new aircraft parking area, or apron as it is commonly known, was designed, measuring 1,000 ft. by 600 ft., and built to the same specifications as the runway and taxiways to enable heavy aircraft to park when refuelling and during the embarkation and disembarkation of passengers and freight. With the increasing size of long-range aircraft, and in view of the unpredictable expansion of traffic, the parking area, which was designed in 1951, is now considered to be too small and two further extensions of 200 ft. by 600 ft. wide will be completed to the same specifications in the near future.

The main runway was completed in November, 1953, when it was first used by the Comets of Union Aëromaritime des Transport and the Constellations of K.L.M.,



"Will passengers for flight No. . . ." Loud speakers of the comprehensive system at the new Terminal.

the Netherlands airline. The taxiways and the new aircraft parking apron were finally completed early in 1956 and the entire area of new tarred surface now covers approximately 75 acres. The cost of the runway, taxiway and aircraft parking area bears very favourable comparison with other large international airports and when completed was approximately £243,000.

The Weather.

A careful study of climatic conditions was necessary in order that the most suitable facilities should be provided. In general there is a fairly well-defined wet and dry season in the area of Kano, the rain starting in about May and finishing in October, with the rest of the year comparatively dry. During the rains cumulo-nimbus clouds, extending up to 30,000 ft. and above, are common and on occasions give rise to almost continuous lightning and thunder with gusts of 40 to 50 miles per hour. Generally speaking these local storms are not of long duration, nor do they cover large areas. Line squalls are also prevalent during the rainy season which are treated with great respect in aviation circles. These line squalls, on occasion, extend along a front of 200 to 300 miles and normally travel from north-east to south-west, at a speed of about 30 miles per hour. Such storms usually give rise to extremely heavy

rain, reducing visibility to several yards at times, whilst the cloud base falls to two to three hundred feet. Strong winds accompany them, normally from the east, with gusts of up to 90 miles per hour. The width of the belt of heavy rain and low cloud averages about 20 miles; behind this the cloud base tends to lift, eventually leaving a layer of alto-stratus having a base of about 12,000 ft. with light rain falling from it, the wind becoming light or moderate.

During the dry season in Kano, between October and May, conditions of haze prevail. This is due to the Harmattan, a dry east wind heavily laden with dust from the Sahara, which reduces visibility to 1,000 yards and sometimes less. The Harmattan occurs in spells of a few days at a time with reasonable or good visibility during the intervening periods.

Runway and Taxiway Lighting.

Up to the present no mention has been made of the complex systems of runway and approach lighting which have been installed. In 1951 a careful study was made of the international requirements for airport lighting and consideration was given to the systems that would be most suitable for Kano, having regard to the meteorological conditions in that area and particularly to the effects of the Harmattan. Eventually it was decided that a system of

from the threshold; the heights of the approach lights are graduated on poles sloping towards the threshold of the runway. A Calvert system of cross bar sodium lights, showing only in the direction of the approach, to give indication of lateral flight forms the rest of the approach system. This high intensity approach system has been installed for Harmattan conditions for aircraft landing towards the north-east, the normal prevailing wind direction during the dry season. At the tops of the pillars of the centre line posts, extending from the end of the runway for 2,000 ft. to the south-west, low intensity omni-directional red lights have been installed with 250 watt filaments.

During the rainy season the wind is more often 180 degrees in the opposite direction and although no lead in lighting system was installed until 1955, the need for it became apparent after the opening of the aerodrome and the installation of a low intensity system has now been accomplished. This was necessary as aircraft commanders reported during the first wet season of operation that when landing towards the south-west in conditions of reasonably clear visibility they were finding difficulty in lining up on the runway as they could not see properly the

high intensity lights, which are bi-directional along the axis, when they were flying parallel with the runway. From sources within the Department of Civil Aviation, therefore, a single line of omni-directional 250 watt red lights was installed at 200 ft. intervals. As the result of advice from the Ministry of Transport and Civil Aviation in London an additional cross bar of omni-directional red lights at the 1,000 ft. point was later installed to provide lateral indication and it has now been generally agreed that the system of lead in lights at the north-east end of the runway is very satisfactory.

When work on the taxiway started plans were put into effect for the installation of low intensity blue taxiway lights of which 170 have now been installed.

The main runway lighting was completed towards the end of 1953 and, on the 1st January, 1954, the new runway was opened for day and night operations, the first users being the Comet I's, the Constellations, the Hermes, the DC6s and the Argonauts. The taxiway lighting was finally completed in October, 1956. The total cost of the complex runway approach and taxiway lighting systems was in the neighbourhood of £60,000.



Pilot's view of the new buildings and runway. The old terminal and runway are top left.



Kano Airport Hotel.

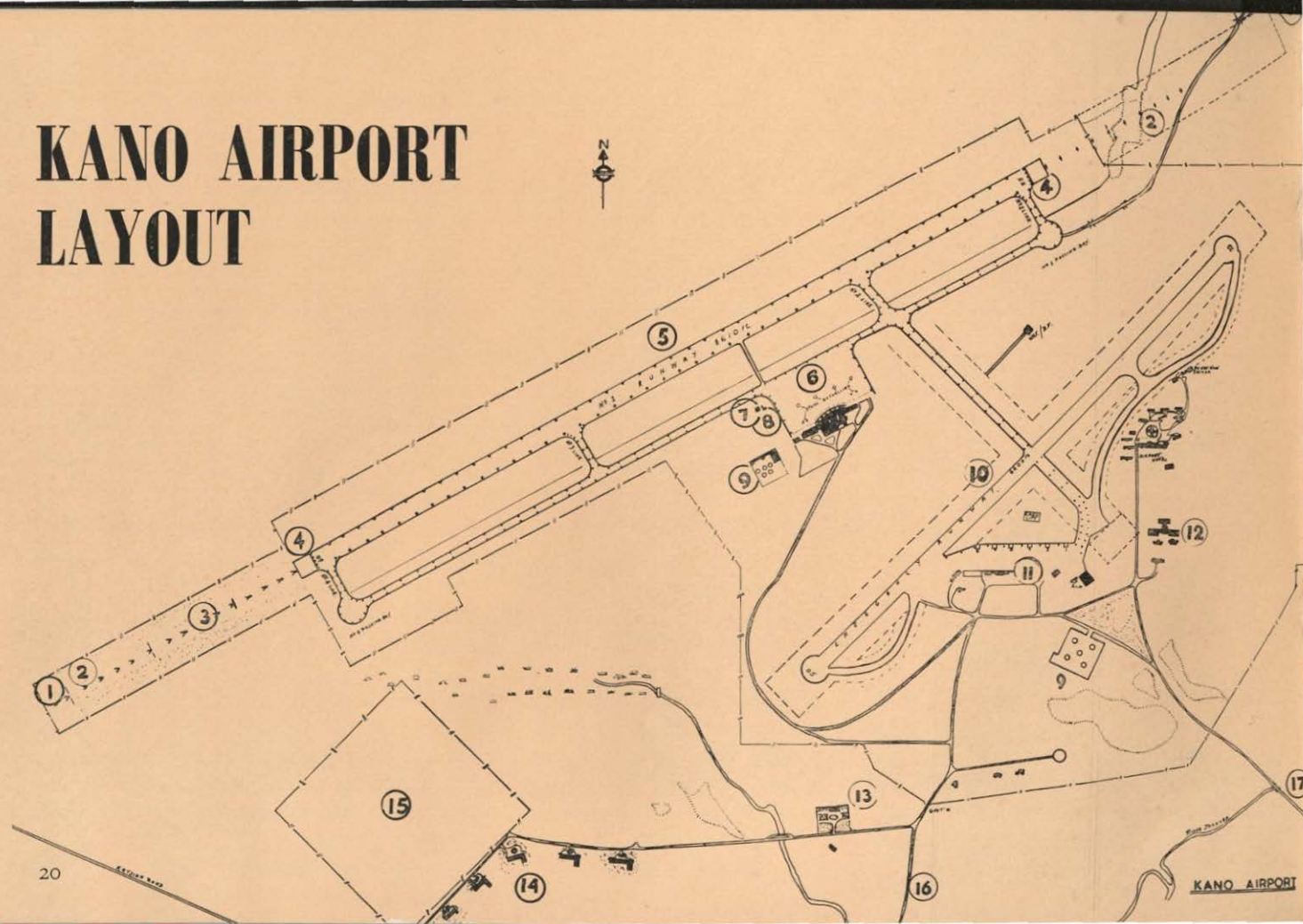
GENERAL OPERATIONS

AFTER the main runway was opened for general use the old runway was closed as it was showing signs of breaking up and constant trouble was being experienced with the lighting. It is now kept on a care and maintenance basis for use in emergencies. It was, of course, necessary to continue using the old terminal building at the southern side of the aerodrome but for obvious reasons the Control Tower on the building in this position was of no use on the new runway. This problem had been anticipated and plans had been made for the construction of a temporary Control Tower in which were incorporated the switch gear and control panel for the runway, taxiway and approach system for the new runway. This temporary Control Tower was brought into operation when the new runway was opened and it has served its purpose well and at the time of writing is still in use.

Although it was necessary to move the Control Tower, the Flight Information Centre and the Meteorological Services remained in their original positions, however, on the first floor of the old terminal building. The telecommunications aeronautical fixed services also continued to be operated from the old position near the old terminal building.

A grave disadvantage which presented itself when the new runway was brought into use was the long distances it was necessary for aircraft to taxi and considerable apprehension was felt in using the old cross runway as a taxi link to the old terminal building, as it had never been compacted to bear the weight of large modern aircraft. This, however, survived two wet seasons during which it was frequently and carefully inspected for deterioration. In 1954 it was necessary, owing to the increasing traffic, to build a semi-

KANO AIRPORT LAYOUT



LEGEND

- | | |
|----------------------------|--------------------------------|
| 1 Locator Beacon. | 10 Emergency Runway. |
| 2 Approach Lighting. | 11 Old Terminal. |
| 3 Area of high intensity. | 12 Power Station. |
| 4 Stopway. | 13 Airport Commandant's House. |
| 5 No. 1 Runway. | 14 Staff House. |
| 6 Apron. | 15 Girls' Training College. |
| 7 Temporary Control Tower. | 16 Road to Kano City. |
| 8 Standby Generator. | 17 Road to Kano Township. |
| 9 Fuel Dump. | |

permanent extension to the old terminal building; the old aircraft parking area also was the cause of some concern as it was rapidly becoming totally inadequate to accommodate the larger sizes of aircraft.

It was clear at the beginning of 1951, after the plans for the new runway had been agreed, that a new terminal building was necessary as being complementary to the runway, and that together they would form virtually a new airport. Preliminary designs were considered and on the 20th July, 1951, the Director of Civil Aviation called a meeting of government departments concerned in such a project and senior officers of the Posts and Telegraphs, Public Works, Customs, Health, Immigration and Meteorological Services, and also the representatives of the airlines then operating through Nigeria, attended to discuss plans for a new passenger building at Kano. Requirements were considered in detail and many suggestions put forward were later incorporated in the final plans, which were drawn up jointly by the Departments of Civil Aviation and the Public Works. After detailed plans had been completed by the architects and engineers of the Public Works

Department towards the end of 1951 the Chief Civil Engineer of the British Overseas Airways Corporation was asked for his views and some valuable advice was given. The Director of Civil Aviation also took the plans to London towards the end of 1951 to discuss them with the aerodrome specialists in the Ministry of Civil Aviation. By that time a preliminary estimate of the cost of the new runway had been made, as well as an initial estimate of the cost of the new terminal building. The value of the new runway to the British Overseas Airways Corporation for their international services, particularly between England and South Africa, were appreciated and the British Government made an offer to the Nigerian Government, which was accepted, to contribute a substantial sum as a proportion of the cost of the new airport. Towards the end of 1953 tenders for the construction of Kano terminal building were invited and in May, 1954, a contract was awarded to G. Cappa Ltd., an Italian building contractor operating in Nigeria. The electrical work in the building and the installation of the air conditioning was undertaken by sub-contract.



The " Flying Dutchman " (KLM)
refuelling at Kano.

THE AIR TERMINAL

THE terminal building, which is to be opened formally by His Excellency the Governor-General, Sir James Robertson, G.C.V.O., K.C.M.G., K.B.E., and the Nigerian Minister of Communications and Aviation, Dr. the Hon. K. O. Mbadiwe, M.H.R., on the 4th May, 1957, has now been completed except for the operations wing for which some technical equipment is still awaited. It will, however, be ready for the handling of passengers on international and internal air services. The building, which consists of a main central block three storeys high surmounted by a Control Tower, extends over a frontage of 900 ft., and the roof area covers in the neighbourhood of $1\frac{1}{3}$ acres. The wing at the westerly end, which has been specially built as a fire station, accommodates up to twelve vehicles, including fire tenders, ambulances and fast patrol

vehicles. Following the building line towards the east there is a staff canteen and four large and specially designed bays for airline equipment which can accommodate steps up to the size used by Super Constellations. Immediately on top of this section is a public observation roof which has a spiral staircase at the rear to provide access for the public. Further east again there is an internal services lounge and medical first-aid room, above which is an indoor restaurant, a cocktail bar and an outdoor restaurant for use by the general public.

The centre of the building, a large three-storey area, is built in the form of a crescent. The ground floor consists of a large hall with airline booking counters in which there are an inquiry booth, a lost luggage office, a post office, telephone booths and other amenities. The operational side



Airport approach for embarking passengers and visitors.

of the building facing the runway consists of a section on the ground floor for passenger handling in which there are four wings or units through which passengers can be handled in either direction. At the end of each unit are counters for Customs, Health and Immigration formalities and in the centre there are customs areas for baggage clearance. Each unit is also equipped with separate microphones and loud speakers so that passengers may sit in comfort until called by name to complete the necessary clearance formalities. On each side of the units there are separate entrances to enable baggage to be carried on trolleys through slightly wider passages designed for the purpose. To the rear of the passenger handling units are offices for the Immigration and Medical authorities in which interrogation and medical inspections may be carried out should these ever be necessary. The entire block east of the passenger handling units has been designed for the customs clearance of freight and the eastern extremity of the building houses a large and intricate air-conditioning plant which serves the operational section. An additional wing to the rear, and built at right angles to the main building, houses the electrical switch gear, the emergency power units for the complex electrical system and telephone exchanges.

The entire front of the first floor facing the runway is

confined to accommodation for transit passengers, who form 90 per cent. of the passenger traffic at Kano Airport. At the westerly end is a restaurant, large enough to accommodate 250 people and a modern and very comprehensive kitchen adjoins it where provision has been made for bulk deep freeze storage. There is also a large lounge which can accommodate another 300 passengers in which there are cocktail bars, shops, a bank and a barber's shop. For the benefit of travellers there is a special room in which children will be able to play where there will be rocking horses, see-saws, chutes and other playthings. There is also a special air-conditioned V.I.P. room in this wing of the building which can be used as a conference room if required.

The top floor is purely operational and consists of a central block in which the Flight Information Centre is situated. This part of the Air Traffic Control system forms the nerve centre of the airport and it is from this room that the long-range control of aircraft is conducted. A large area to one side of the Control Room is occupied by the British West African Meteorological Services with a forecasting office which embraces an area extending over the whole of Africa to mid-Europe in the north. Weather surveillance radar and other special equipment has been installed and here all pilots are given their weather forecast

before departure which is amended as necessary during flight. To the east of the Control Room another large area is occupied by the aeronautical fixed services of the Posts and Telegraphs Department, which may be described as the long-range ground to ground communication system. By these radio services detailed information is exchanged speedily with points of destination and departure in respect of every aircraft movement. The Flight Information Centre, or, as it may be more aptly described, the central control, exchanges essential information with the Meteorological Services and the Posts and Telegraphs fixed

services, and is in direct communication with aircraft by long-range radio telephony and wireless telegraphy. This Control is also the co-ordinating centre for search and rescue measures over all the territory of Nigeria and the Cameroons.

Adjoining the Meteorological section is an aeronautical information service where flight plans are filed which contain details of all flights such as the numbers of passengers carried, the fuel on board and the height to be flown. In this section the captains and crews of all aircraft can obtain up-to-the-minute information of aeronautical

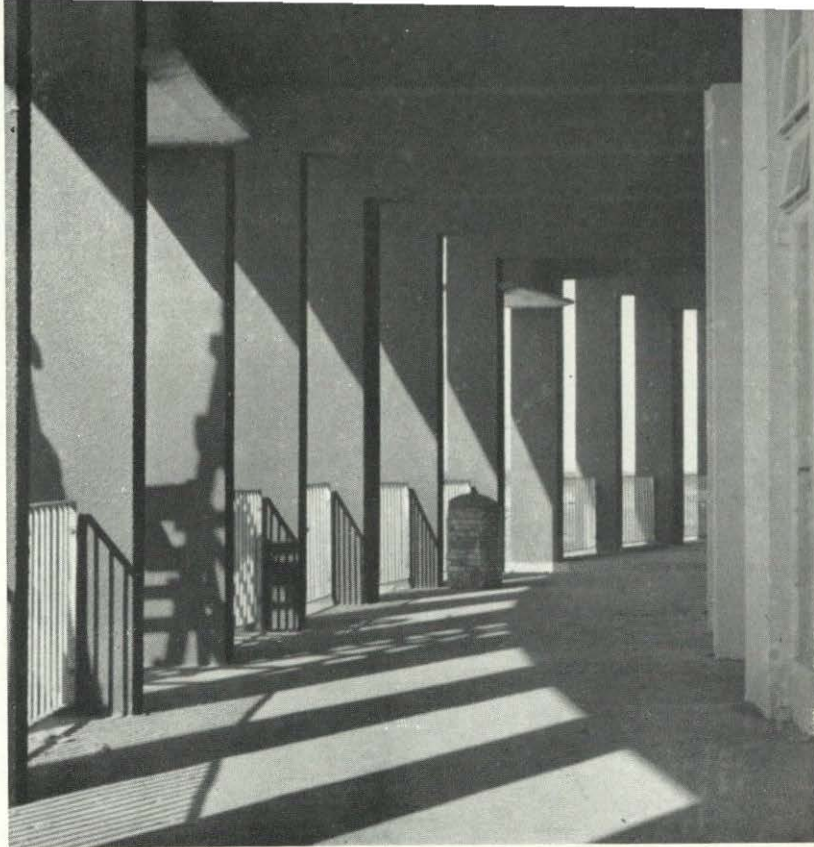


*The top of the Tower
showing the scanner
and beacon.*



facilities, including radio navigational aids, for the routes on which they intend to fly. Other accommodation in this part of the building houses the main public address system for making public announcements throughout the building, and for which the main microphone is positioned in the Flight Information Centre. The rear of the building on this floor is mainly set aside for the operational staff of the airlines except for one block of offices which is occupied by the Airport Commandant and his staff.

Immediately on top of the Flight Information Centre is the Control Tower, from which aircraft are controlled by radio telephony within a 40-mile zone. The equipment in the tower is impressive and consists of a main desk specially designed to hold various items of radio equipment including monitoring receivers to ensure that the radio navigational aids are functioning correctly, and the console for the automatic VHF radio direction finding equipment. The desk also houses the complex system of switches for the runway approach and taxiway lighting systems. On the roof of the Tower, which has been specially strengthened for the purpose, is a $2\frac{1}{2}$ kilowatt rotating visual beacon which flashes green and white alternately and which has been in operation for several months. Aircraft captains have reported that this beacon has been seen when approaching the airport across the desert from a distance of 70 miles.



A corridor in the new building.

To the rear, or south of the rotating beacon, is the scanner for the meteorological weather surveillance radar.

A large staff is necessary to maintain a building of this nature. It is never closed throughout the year and indeed the main bulk of traffic is processed during the night, as the airlines normally depart from the continent of Europe or South Africa during daylight which entails their arrival at Kano during the night. There is another good reason for this also which is simply that smoother flying conditions are encountered when flying over the Sahara during the hours of darkness rather than in daylight hours when the hot ascending air gives rise to turbulence at the lower levels. When considering the staff position, and particularly the cleaners necessary, it must be remembered that there are 237 rooms, 75 wash basins, and 1,400 windows in the building. It is indeed a window cleaners paradise, as it has been estimated that there are 140,000 panes of glass, although it has not been verified whether the double panes in the Control Tower have been included in this number.

The Flagstaff, Ensigns and Flags.

The building would not be complete without the 60 ft. flagstaff which has been erected on a grass area at the rear of the building. At the truck of the mast the Airport Commandant's Nigerian Civil Aviation flag is normally flown but the Director's flag is flown when he is present and appropriate flags are flown in the presence of higher authority, the Union Jack when a Regional Governor is on the airport, and his personal standard in the presence of the Governor-General. The occasion arose in 1956 when the Royal Standard was flown at the masthead at Kano Airport during the Royal Visit. The Civil Air ensign is appropriately flown, in compliance with the Air Navigation Order at the gaff of the flagstaff in accordance with tradition and the Customs and Excise ensign is flown at the yard arm to denote that the airport is a port of entry for Nigeria. The national flags of the airlines operating through Kano are flown on ceremonial occasions on the front of the building facing the runway.



SERVICES and SUPPLIES

THE main source of electrical power is obtained from the power station supplying the town of Kano, but there are two generators of 55 K.V.A. and 95 K.V.A. output which cut in within 30 seconds to supply the operational needs in the event of a main power failure. To supplement this emergency power supply there are also two 200 K.V.A. diesel generators on the airport, enough in themselves to supply a small town, which automatically start within seven minutes and provide sufficient power for the airport independently of the town supply. The main source of supply of electricity originates from the power station of the Electricity Corporation of Nigeria situated at Challawa on the banks of the river about ten miles to the south of the city. This supply terminates at a transformer station on the east side of the airport at the airport main generator plant. From this point it is connected to the switchgear

room at the rear of the terminal building by means of an 11 K.V.A. underground ring main cable.

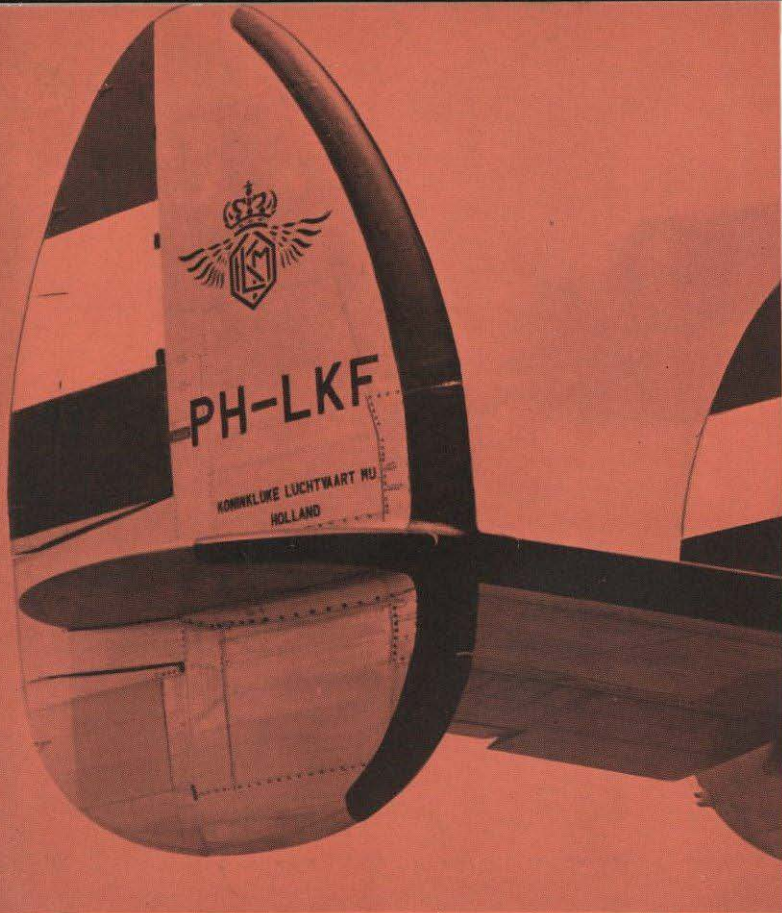
It has been estimated that the total power requirements for the Airport Terminal Building is in the neighbourhood of 500 kilowatts and it is interesting to note that the main kitchens can absorb up to 180 kilowatts.

Fire Patrol Service.

For the opening of the terminal building the numbers of the Fire Patrol Service at Kano Airport has been raised to 120 patrolmen. Under a Fire Officer there are non-commissioned officers and other ranks whose duties, although consisting primarily of the specialised work of airport fire fighting, also include guard duties on the runways and taxiways, inside the main building and at all buildings within the airport boundary in which technical



*An engine change for an
international plane at Kano.*



equipment is housed. The Customs authorities provide "Waterguards" within the defined "customs area" and on the public side of the airport the regular Nigeria Police are responsible for normal policing duties. They are prepared also to assist the airport Patrol Service in special emergencies. The airport Patrol Service occupies the fire section at the easterly end of the terminal building and it is always on the alert for emergencies. The range of vehicles available for immediate use consists of several large airport fire tenders, an ambulance, fast patrol vehicles and cranes and tractors. The front line fire tenders and the fast patrol vehicles are equipped with radio and controlled from the Control Tower.

Along the front of the building a special barrier, which is policed by the Patrol Service, has been erected to prevent unauthorised access by people to the aircraft. This barrier has specially illuminated numbers to assist the parking of aircraft and also has a hydrant system for fire fighting. Inside the building there is also a hydrant system with hose points at frequent spacing.

Refuelling.

A static refuelling system has been installed on the aircraft parking apron from which four different grades of aviation fuel are available ; jet fuel can also be supplied by

this system. This high pressure system, which enables aircraft to uplift large quantities of fuel in a short space of time, permits quick turnrounds of the services. The installation on the parking apron is capable of refuelling four large aircraft simultaneously as well as four internal services aircraft. The numbers of refuelling bays will be increased when the extensions to the aircraft parking apron have been completed. The storage and the pumping plants for the aviation fuel are situated in an area of land to the west of the terminal building leased to the two companies who jointly undertake the static refuelling on the airport. The companies concerned are the Shell Company of West Africa Ltd., and Mobil Oil (Nigeria) Ltd. There is storage for over a million gallons of aviation fuel in Kano.

Radio Navigational Aids.

The radio navigational aids now associated with Kano Airport have been modernised in the past few years. To the south of the walled city there is a special transmitting station where there is a $2\frac{1}{2}$ kilowatt radio navigation beacon for which two 200 ft. masts were erected for the aerial system. The beacon is in a remote position from the airport so that the powerful transmitter will not cause interference with other radio equipment associated with the Air Traffic Control and the fixed radio services. This main beacon is



Souvenirs from Kano—for visitors to the Hotel.



Visitors' Verandah at the New Terminal.

supplemented by a 1 kilowatt beacon which can be placed in operation when the more powerful equipment is undergoing maintenance.

At the end of the main runway there are dual locator beacons of 100 watt output to enable aircraft to make instrument approaches in conditions of poor visibility. In the event of one of these transmitters failing the other cuts in automatically. In the locator beacon house there is also a transmitter known as the D.M.E., or Distance Measuring Equipment, and this is used by B.O.A.C. aircraft which carry complementary airborne equipment.

On a special site within the aerodrome boundary there is V.H.F. automatic direction finding equipment which is remotely controlled and has dial presentation in the Air Traffic Control Centre. A manually controlled H.F. direction finding service is also available. At the time of writing new VOR equipment is in shipment from England en route for Kano and this will be installed during the summer of 1957.

Airport Hotel.

The Airport Hotel, which forms part of the amenities, is situated at about $1\frac{1}{2}$ miles to the west of the main terminal building and within the airport boundary. Catering facilities are provided by Nigeria Hotels Limited, which

also undertake the catering services at the terminal building. Full hotel services are obtainable and approximately 110 visitors can be accommodated.

Residential Housing.

^e Many of the staff live in the residential area in Kano about five miles away but, to the south west, just outside the airport boundary, a housing project is under development, as it was clear in recent years that key personnel should reside in the vicinity. Fifty-five acres of land are under development for this purpose and some of the houses constructed under the building programme have now been finished. The airport commandant and other senior officers of Civil Aviation, the medical officer and customs and immigration officers are now residing in the area. Commercial firms are also building private houses in the vicinity and some have already been completed for the staff of the aviation refuelling companies.

The Cross Roads of Africa

The historical significance of the trumpeter with his two camels, who are well-known figures at Kano Airport, is of some interest. In the days of the old walled city, which was mentioned in Arabian Nights, it was the practice that the Emir's trumpeters should constantly

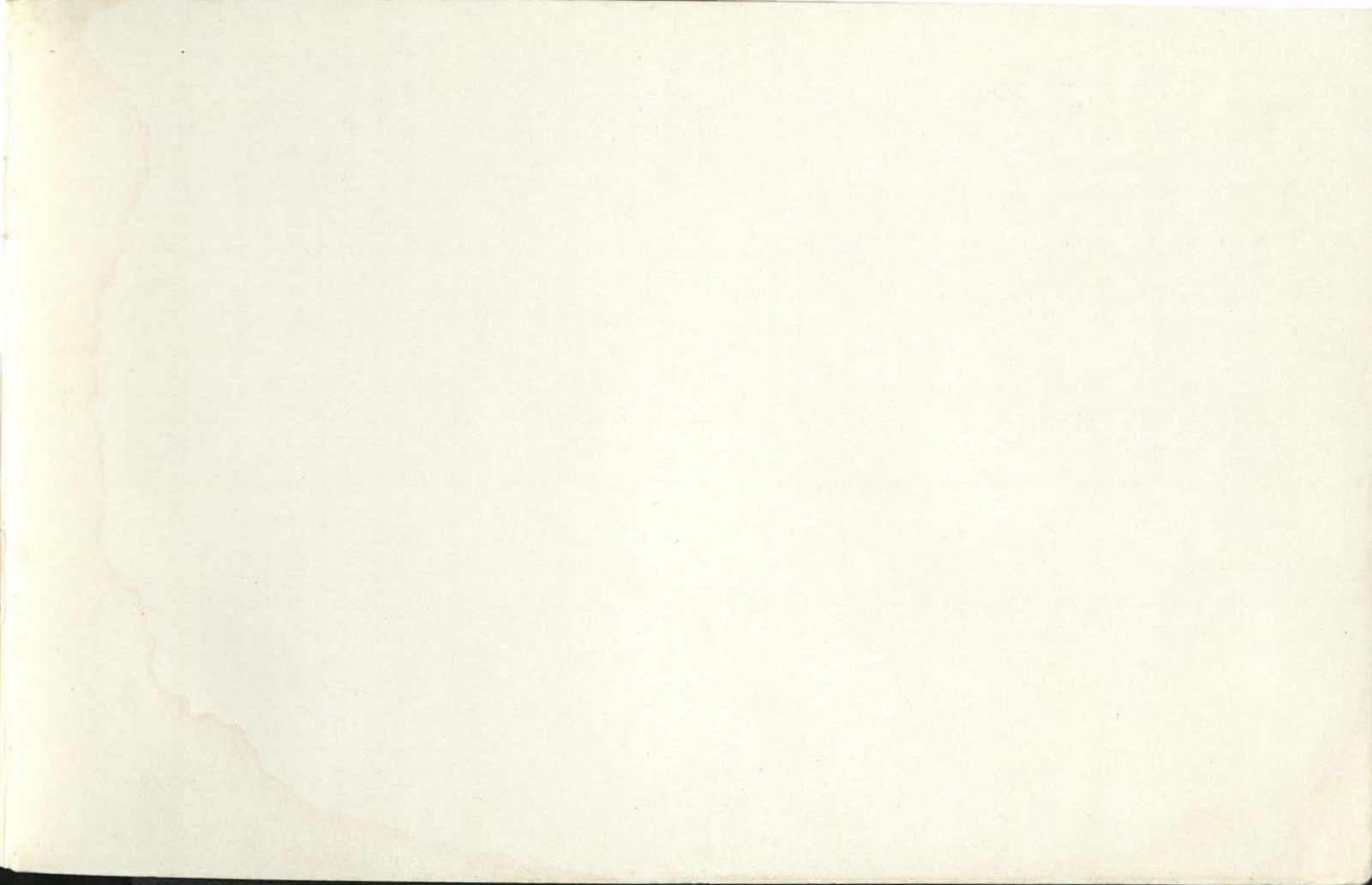
survey the desert and announce the arrival of camel trains on the routes across the Sahara with a blast on the traditional trumpet. In 1936, when Imperial Airways started two services a week to Kano, it was the Emir's wish that the tradition of the trumpeter should be retained and that he should announce the arrival of aircraft carrying the Royal Mail from England. Since then the trumpeter has been a familiar sight on the airport and he is, in fact, a recognised member of the airport staff. A few years ago the Emir presented the Department of Civil Aviation with the two camels which can be seen with the trumpeter any day on the airport. The trumpeter himself and these two camels, who are affectionately known as Bert and Daisy, are well known to air travellers and the camels are now probably amongst the most photographed animals in the world.

In aeronautical matters Nigeria is comparatively a young country but rapid development is now taking place, not only with the internal services of the national airline, the West African Airways Corporation, but in the long-range services through Kano and Lagos. At Kano development has been particularly marked and the airport in its situation on the fringes of the Sahara can with some justification, lay claim to the title of the "Aviation Cross Roads of Africa".

At present the following Airlines operate scheduled services through KANO:

<i>Air France</i>	Paris, Mauritius with Constellation aircraft; Paris, Cotonou, Duala, Kano, Niamey with DC3 aircraft.
<i>B.O.A.C.</i>	London, Lagos, Accra with Strato-cruiser and Argonaut aircraft.
<i>Central African Airways</i>	Salisbury, Elizabethville, Brazza-ville, Algiers, London with Viking aircraft.
<i>K.L.M.</i>	Amsterdam, Johannesburg with Super Constellation aircraft.
<i>Pan American Airways</i>	New York, Johannesburg with DC6B aircraft.
<i>Sabena</i>	Brussels, Leopoldville, Johannesburg with DC6 and DC6B aircraft.
<i>South African Airways</i>	London, Johannesburg with DC7B aircraft.
<i>Trasports Aeros Portugueses</i>	Lisbon, Lavanda, Lourenco Marques with Super Constellation aircraft.
<i>W.A.A.C.</i>	Internal services with Herons, DC3 and Bristol Wayfarer aircraft.







A FEDERAL INFORMATION SERVICE PUBLICATION
LAGOS • NIGERIA